

(19) World Intellectual Property Organization  
International Bureau



NO 001 2004

(43) International Publication Date  
30 October 2003 (30.10.2003)

PCT

(10) International Publication Number  
**WO 03/088972 A1**

(51) International Patent Classification<sup>7</sup>: **A61K 31/519**,  
A01N 43/90, C07D 487/00

HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MA,  
MG, MK, MN, MX, NO, NZ, OM, PH, PL, RO, SC, SG,  
TN, TT, UA, US, UZ, VN, YU, ZA.

(21) International Application Number: PCT/US03/12127

(22) International Filing Date: 18 April 2003 (18.04.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/374,219 19 April 2002 (19.04.2002) US  
60/388,557 13 June 2002 (13.06.2002) US

(71) Applicant (for all designated States except US):  
**SMITHKLINE BEECHAM CORPORATION**  
[US/US]; One Franklin Plaza, Philadelphia, PA 19103  
(US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BOEHM, Jeffrey**,  
C. [US/US]; 709 Swedeland Road, King of Prussia, PA  
19403 (US). **WIDDOWSON, Katherine, L.** [CA/US];  
709 Swedeland Road, King of Prussia, PA 19406 (US).  
**CALLAHAN, James, F.** [US/US]; 709 Swedeland Road,  
King of Prussia, PA 19406 (US). **WAN, Zehong** [CN/US];  
709 Swedeland Road, King of Prussia, PA 19406 (US).

(74) Agents: **DINNER, Dara, L.** et al.; SmithKline Beecham  
Corporation, Corporate Intellectual Property, UW2220,  
709 Swedeland Road, P.O. Box 1539, King of Prussia, PA  
19406-0939 (US).

(81) Designated States (national): AE, AG, AL, AU, BA, BB,  
BR, BZ, CA, CN, CO, CR, CU, DM, DZ, EC, GE, HR,

(84) Designated States (regional): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AU, BA, BB, BR, BZ, CA, CN, CO, CR, CU, DM, DZ, EC, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MA, MG, MK, MN, MX, NO, NZ, OM, PH, PL, RO, SC, SG, TN, TT, UA, UZ, VN, YU, ZA, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- of inventorship (Rule 4.17(iv)) for US only

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: NOVEL COMPOUNDS

(57) Abstract: Novel substituted 2, 4, 8-trisubstituted-8H-pyrido[2,3-d]pyrimidin-7-one compounds and compositions for use in therapy as CSBP/p38 kinase inhibitors.

WO 03/088972 A1

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/12127

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 31/519; A01N 43/90; C07D 487/00.  
US CL : 514/258.1, 264.1; 544/279.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 514/258.1, 264.1; 544/279.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
CAS ON-LINE, EAST

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P	WO 02/059083 A2 (SMITHKLINE BEECHAM CORPORATION) 01 August 2002 (08.01.2002) -- see CASPLUS Accession No. 2002:575047, Document No. 137:140533, (c) 2003, ACS, Columbus, OH.	1-6
A, P	US 6,498,163 B1 (BOSCHELLI et. al.) 24 December 2002 (24.12.2002).	1-6
A	US 5,733,914 A (BLANKLEY et. al.) 31 March 1998 (31.03.1998).	1-6



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

23 July 2003 (23.07.2003)

Date of mailing of the international search report

16 SEP 2003

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

Mukund Shah  
Telephone No. 703-308-1235

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/12127

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-6

Remark on Protest

☐  
☐

- The additional search fees were accompanied by the applicant's protest.  
No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**

PCT/US03/12127

**BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING**

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-6, drawn to compounds in claim 1, their compositions and methods of treatment.

Group II, claim(s) 7, drawn to intermediates.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

A. Compounds of Group I have a core of a bicyclic system of 8H-pyrido[2,3-d]pyrimidin-7-one while those of Group II have a core of a monocyclic system of pyrimidine.

B. Compounds of Group I have therapeutic value while those of Group II are used as intermediates, and do not share the same utility with those of Group I.